5. The method according to claim 1, comprising:

when a remote server with relatively high computing power and a communication link between a site of the energy supply system and the remote server are available and quality of the communication link is relatively high, performing the prediction and the optimization on the remote server, and performing the controlling in the real time manner on a local controller with relatively low computing power provided on the site of the energy supply system;

when the remote server is available and quality of the communication link is relatively low, performing the prediction on the remote server, and, on the local controller with an intermediate computer power, correcting result of the prediction and performing the optimization and the controlling in the real time manner; and

when at least one of the remote server and the communication link is unavailable, performing the prediction, the optimization and the controlling in the real time manner on the local controller with relatively high computing power.

6. An energy management system for an energy supply system which includes at least an energy storage, a load and a generator with power dependent efficiency, the energy management system comprising:

prediction means for performing different kinds of prediction;

optimization means for calculating two time variant parameters indicating a discharge lower limit and an upper charge limit, respectively, of the energy storage, based on optimization using different kinds of prediction; and

control means for controlling, in a real time manner, charging and discharging of the energy storage and operation of the generator, with a certain priorities given to various power sources, such that state of charge of the energy storage is controlled within a region between the discharge lower limit and the upper charge limit.

7. The energy management system according to claim 6, wherein the prediction means includes, when a grid power is available to the energy supply system, calculation means for considering a possible duration of blackout in the grid power to predict a blackout duration probability function,

wherein the two time variant parameters are calculated by using the blackout duration probability function.

8. The energy management system according to claim 7, wherein the two time variant parameters are calculated using unnecessary cost criteria including an unnecessary expensive produced energy cost, a generator start cost and an excessive fuel cost.

9. The method according to claim 7, wherein the calculation means includes:

different artificial intelligence based predictors predicting specific blackout durations, each specific blackout duration accompanying an indication of reliability of prediction; and

a distribution generator creating the blackout duration probability function based on results of duration prediction of different artificial intelligence based predictors.

10. The energy management system according to claim 6, further comprising a local controller provided on a site of the energy supply system,

wherein, when a remote server with relatively high computing power and a communication link between the local controller and the remote server are available and quality of the communication link is relatively high, the prediction means and the optimization means are arranged on the remote server, and the control means is arranged on the local controller with relatively low computing power,

when the remote server is available and quality of the communication link is relatively low, the optimization means and the control means are arranged on the local controller with an intermediate computer power while the prediction means is arranged on both the remote server and the local controller, the prediction means on the local controller correcting result by the prediction means on the prediction server, and

when at least one of the remote server and the communication link is unavailable, the prediction means, the optimization means and the control means are arranged on the local controller with relatively high computing power.

11. The method according to claim 3, wherein the prediction of the blackout duration probability function comprises:

predicting specific blackout durations by different artificial intelligence based predictors, each specific blackout duration accompanying an indication of reliability of prediction; and

creating the blackout duration probability function based on results of duration prediction of different artificial intelligence based predictors.

12. The method according to claim 2, comprising:

when a remote server with relatively high computing power and a communication link between a site of the energy supply system and the remote server are available and quality of the communication link is relatively high, performing the prediction and the optimization on the remote server, and performing the controlling in the real time manner on a local controller with relatively low computing power provided on the site of the energy supply system;

when the remote server is available and quality of the communication link is relatively low, performing the prediction on the remote server, and, on the local controller with an intermediate computer power, correcting result of the prediction and performing the optimization and the controlling in the real time manner; and

when at least one of the remote server and the communication link is unavailable, performing the prediction, the optimization and the controlling in the real time manner on the local controller with relatively high computing power.

13. The method according to claim 3, comprising:

when a remote server with relatively high computing power and a communication link between a site of the energy supply system and the remote server are available and quality of the communication link is relatively high, performing the prediction and the optimization on the remote server, and performing the controlling in the